

حاضر ☐

غائب ☐



سَلْطَنَةُ عُمَانِ  
وَزَارَةُ التَّربِيَةِ وَالتَّعْلِيمِ

رقم الورقة	
رقم المغلف	

## امتحان دبلوم التعليم العام للمدارس الخاصة (ثنائية اللغة)

للعام الدراسي ١٤٣٤/١٤٣٥ هـ - ٢٠١٣ / ٢٠١٤ م

### الدور الثاني - الفصل الدراسي الثاني

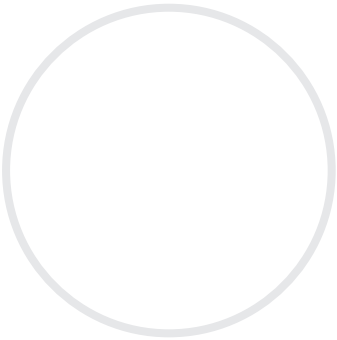
- زمن الإجابة: ثلاث ساعات.
- الإجابة في الورقة نفسها.

- تنبيه: المادة: الأحياء.
- الأسئلة في ( ١٢ ) صفحة.

#### تعليمات وضوابط التقدم للامتحان:

- الحضور إلى اللجنة قبل عشر دقائق من بدء الامتحان للأهمية.
- إبراز البطاقة الشخصية لمراقب اللجنة.
- يمنع كتابة رقم الجلوس أو الاسم أو أي بيانات أخرى تدل على شخصية الممتحن في دفتر الامتحان، وإلا ألغى امتحانه.
- يحظر على الممتحنين أن يصطحبوا معهم بمركز الامتحان كتباً دراسية أو كراسات أو مذكرات أو هواتف محمولة أو أجهزة النداء الآلي أو أي شيء له علاقة بالامتحان كما لا يجوز إدخال آلات حادة أو أسلحة من أي نوع كانت أو حقائب يدوية أو آلات حاسبة ذات صفة تخزينية.
- يجب أن يتقيد المتقدمون بالزي الرسمي (الدشداشة البيضاء والمصر أو الكمة للطلاب والدارسين والزي المدرسي للطالبات واللباس العماني للدارسات ) ويمنع النقاب داخل المركز ولجان الامتحان.
- لا يسمح للمتقدم المتأخر عن موعد بداية الامتحان بالدخول إلا إذا كان التأخير بعذر قاهر يقبله رئيس المركز وفي حدود عشر دقائق فقط.
- يتم الالتزام بالإجراءات الواردة في دليل الطالب لأداء امتحان شهادة دبلوم التعليم العام.
- يقوم المتقدم بالإجابة عن أسئلة الامتحان المقالية بقلم الحبر (الأزرق أو الأسود).
- يقوم المتقدم بالإجابة عن أسئلة الاختيار من متعدد بتظليل الشكل (○) وفق النموذج الآتي:
- عاصمة سلطنة عمان هي:
  - القاهرة ☐ الدوحة ☐
  - مسقط ☒ أبوظبي ☐
- ملاحظة: يتم تظليل الشكل (●) باستخدام القلم الرصاص وعند الخطأ، امسح بعناية لإجراء التغيير.

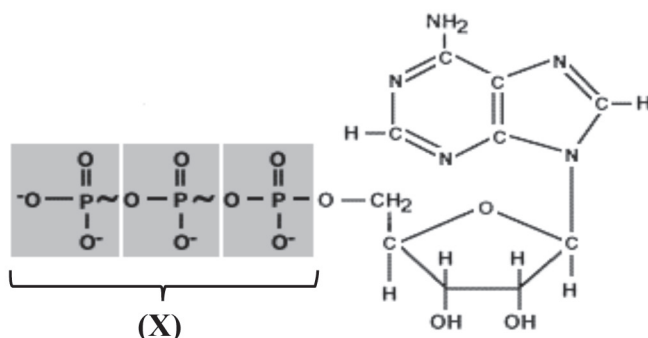
صحيح ☒ غير صحيح ☐ ☒ ☐ ☐ ☐ ☐



**Question 1****(28 marks)**

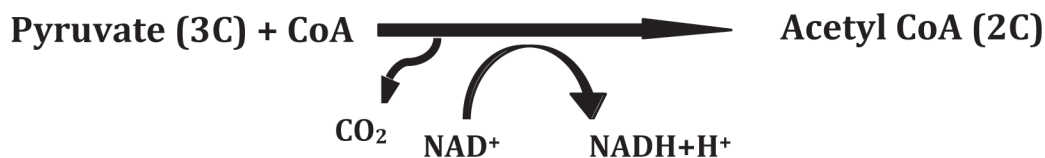
Shade the best correct answer for each of the following questions.

- 1) The diagram below shows the structure of ATP molecule.



The part labeled (X) represents:

- ☐ Ribose.
 ☐ Adenine.
- ☐ Adenosine.
 ☐ Phosphate groups.
- 2) The diagram below shows one stage of the aerobic respiration. In which part of mitochondria this reaction takes place?



- ☐ Matrix.
 ☐ Outer membrane.
- ☐ Inner membrane.
 ☐ Intermembrane space.
- 3) The Calvin cycle requires each of the following inputs EXCEPT:
- ☐  $\text{O}_2$ 
☐  $\text{CO}_2$
- ☐ ATP
 ☐ NADPH

Do not write in this space

- Do not write in this space**



- Do not write in this space**



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8) Toxins released as waste products by certain bacteria are called:

- |                                       |                                      |
|---------------------------------------|--------------------------------------|
| <input type="checkbox"/> perforins.   | <input type="checkbox"/> exotoxins.  |
| <input type="checkbox"/> interferons. | <input type="checkbox"/> endotoxins. |

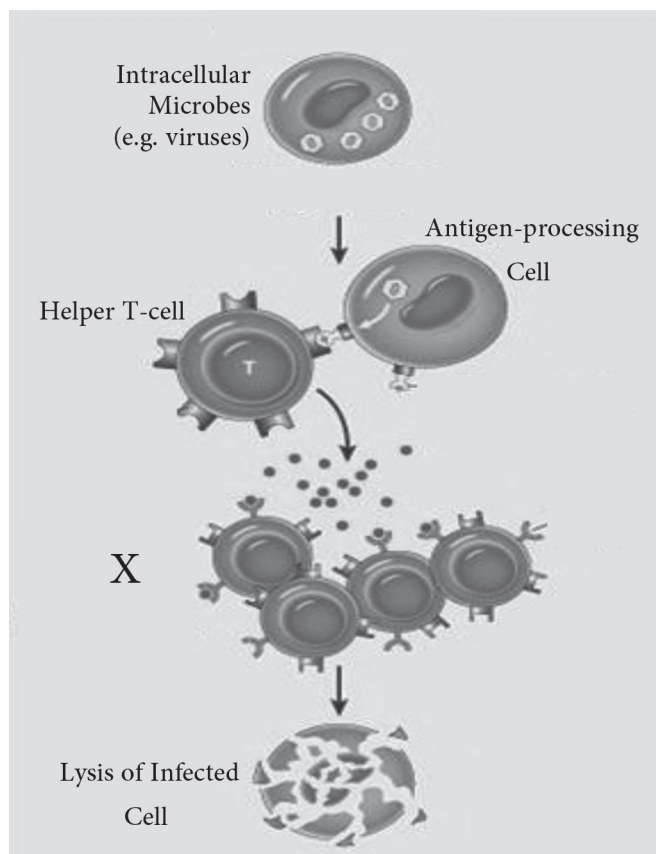
9) AIDS is caused by viruses that specifically invade:

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> basophils.   | <input type="checkbox"/> neutrophils. |
| <input type="checkbox"/> eosinophils. | <input type="checkbox"/> lymphocytes. |

10) Which of the following is true about lysozyme?

- |  |  |
|--|--|
| <input type="checkbox"/> It contains antibodies.   | <input type="checkbox"/> It works at low pH of 2.                |
| <input type="checkbox"/> It phagocytoses bacteria. | <input type="checkbox"/> It destroys the cell walls of bacteria. |

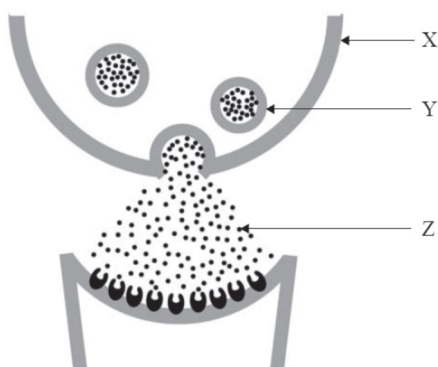
11) The type of T-lymphocytes labeled (X) in the following diagram is called:



- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| <input type="checkbox"/> Helper.    | <input type="checkbox"/> Memory.     |
| <input type="checkbox"/> Cytotoxic. | <input type="checkbox"/> suppressor. |

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- 12) A physician wants to stimulate immunological memory in a patient. Which of the following types of immunity would be the most useful?
- ☐ naturally acquired active. ☐ naturally acquired passive.
- ☐ artificially acquired active. ☐ artificially acquired passive.
- 13) The operation of the sodium-potassium pump moves:
- ☐ sodium and potassium ions into the cell.
- ☐ sodium and potassium ions out of the cell.
- ☐ sodium ions into the cell and potassium ions out of the cell.
- ☐ sodium ions out of the cell and potassium ions into the cell.
- 14) The following diagram shows a synapse between two neurons.



The labels X, Y and Z point to:

	X	Y	Z
<input type="checkbox"/>	pre-synaptic terminal	mitochondrion	acetylcholine
<input type="checkbox"/>	pre-synaptic terminal	vesicle	neurotransmitter
<input type="checkbox"/>	post-synaptic terminal	vesicle	neurotransmitter
<input type="checkbox"/>	post-synaptic terminal	mitochondrion	acetylcholine

**Question 2****(14 marks)**

15) The next diagram represents stages of respiration.

(4 marks)

a. Name the process labeled (A).

\_\_\_\_\_

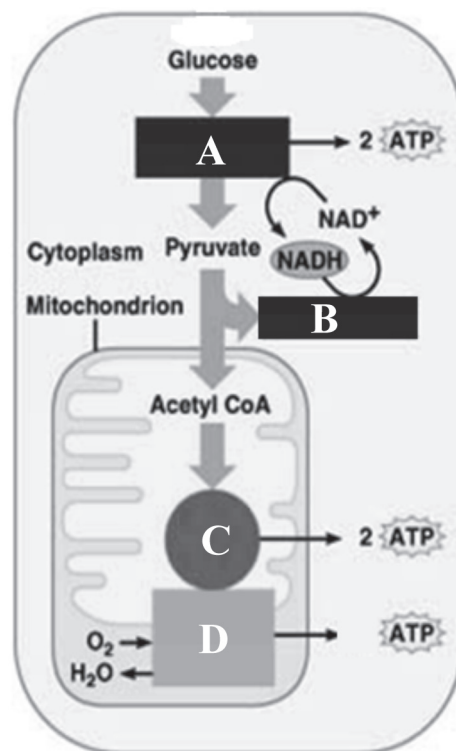
b. Write the letter that labels the correct process in the diagram for below:

(1) The process that provides most of hydrogen atoms for the ATP formation.

\_\_\_\_\_

(2) Process that causes cramps in muscles during exercise.

\_\_\_\_\_



c. How many cycles of the process (C) will take place to produce 114 molecules of ATP from complete aerobic respiration of glucose molecules?

\_\_\_\_\_

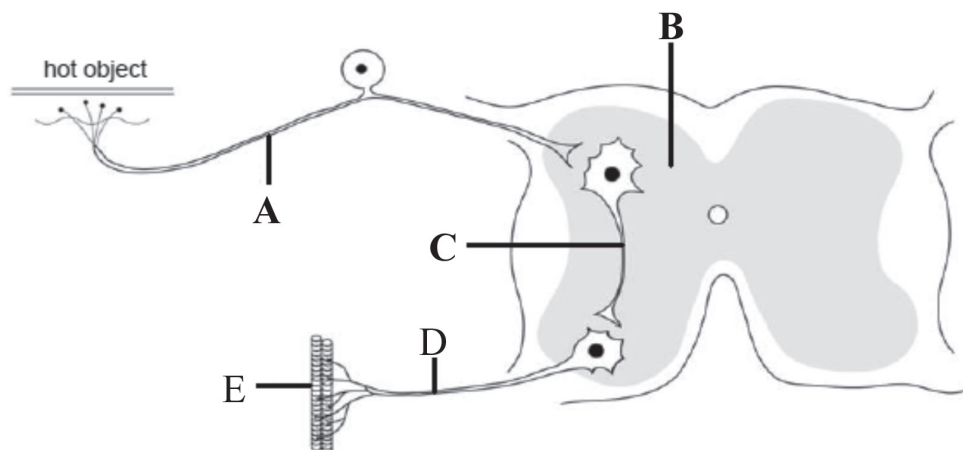
16) Write two of the precautions should be considered to avoid *Salmonella* food poisoning. (2 marks)

\_\_\_\_\_

\_\_\_\_\_

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- 17) The diagram below shows a nerve pathway that is activated when a person touches a hot object. (5 marks)



- a. Name the parts labeled (B) and (C).

B: \_\_\_\_\_

C: \_\_\_\_\_

- b. Write the letter that represents:

(1) The neuron that passes the nerve impulses to the spinal cord.

\_\_\_\_\_

(2) The neuron that carries the nerve impulse to an effector.

\_\_\_\_\_

- c. What is the general name given to the type of nerve pathway shown in the diagram?

\_\_\_\_\_

- 18) During photosynthesis in plants, light energy is absorbed by chlorophyll. This energy is then used to carry out photolysis. (3 marks)

- a. Names two products of photolysis in photosynthesis.

\_\_\_\_\_

\_\_\_\_\_

- b. Write one importance of photolysis.

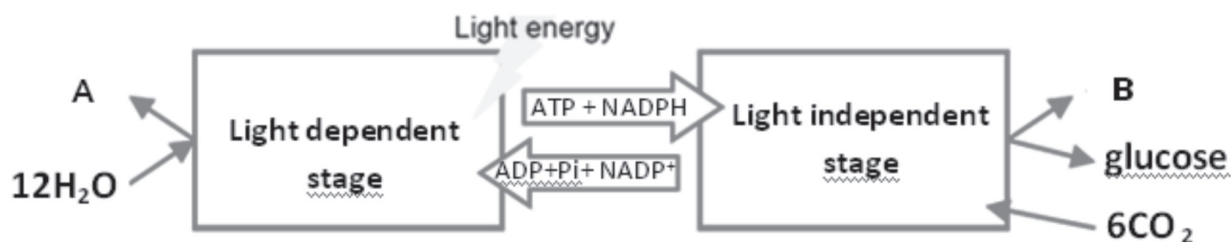
\_\_\_\_\_

\_\_\_\_\_

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**Question 3****(14 marks)**

- 19) The diagram below shows some of the reactions which occur in the two stages of photosynthesis. (4 marks)



- a. Name the products labeled (A) and (B).
- A \_\_\_\_\_
- B \_\_\_\_\_
- b. State the location of light dependent stage and light independent stage of photosynthesis in the chloroplast.
- \_\_\_\_\_
- \_\_\_\_\_
- 20) Complete the table below by determining the type of acquired immunity: (2 marks)

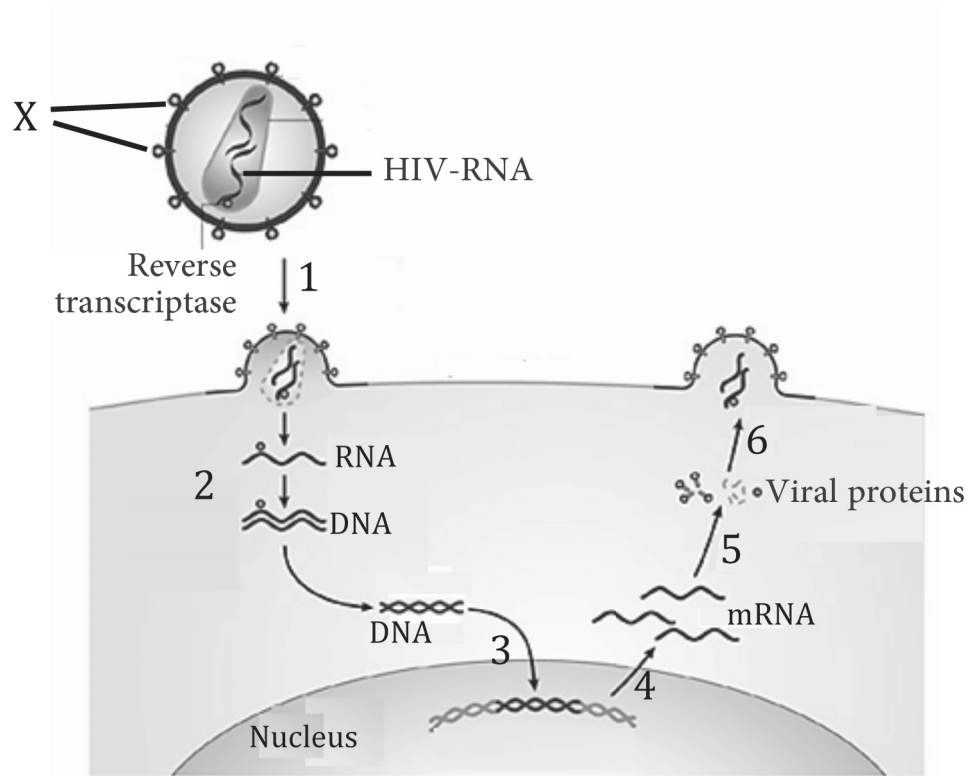
How acquired	Type of immunity
A person gets an infection	
Babies that are breastfed	

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21) The diagram below shows the cell cycle of HIV.

(4 marks)



a. Name the following:

(1) The part of HIV labeled (X).

---

(2) The step of HIV replication process labeled (5).

---

b. Differentiate between steps labeled (2) and (4).

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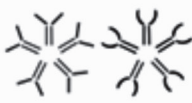

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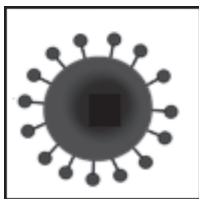
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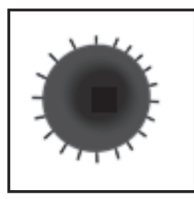
- 22) The table below shows the four types of blood groups and the related red blood cells. (4 marks)

		Group B	Group AB	
Red blood cell type				.....
Antibodies in Plasma	.....	.....	None	 Anti-A and Anti-B
Antigens in Red Blood Cell	 A antigen		.....	None

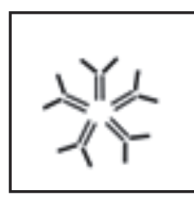
Fill in the blanks of the table with the correct number of the figures below.



(1)



(2)



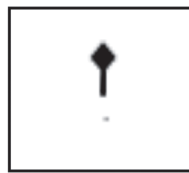
(3)



(4)



(5)



(6)

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**Question 4****(14 marks)****23)** The next diagram represents the structure of the antibody.**(3 marks)**

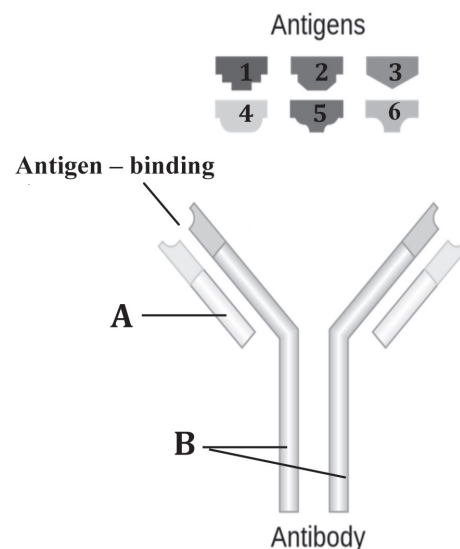
- a. Name the parts labeled (A) and (B).

A \_\_\_\_\_

B \_\_\_\_\_

- b. Which of the antigens will specifically attach to the antigen-binding site.

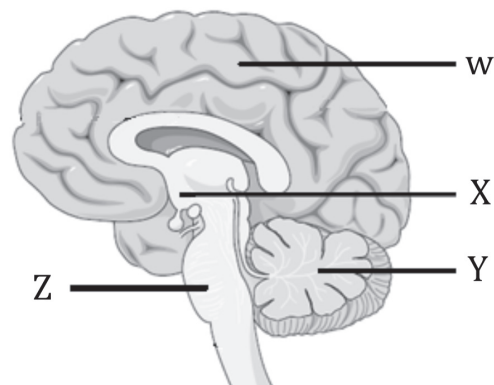
\_\_\_\_\_

**24)** The diagram below shows vertical section through the human brain.**(4 marks)**

- a. Name the parts labeled ( W ) and ( X ).

W: \_\_\_\_\_

X: \_\_\_\_\_



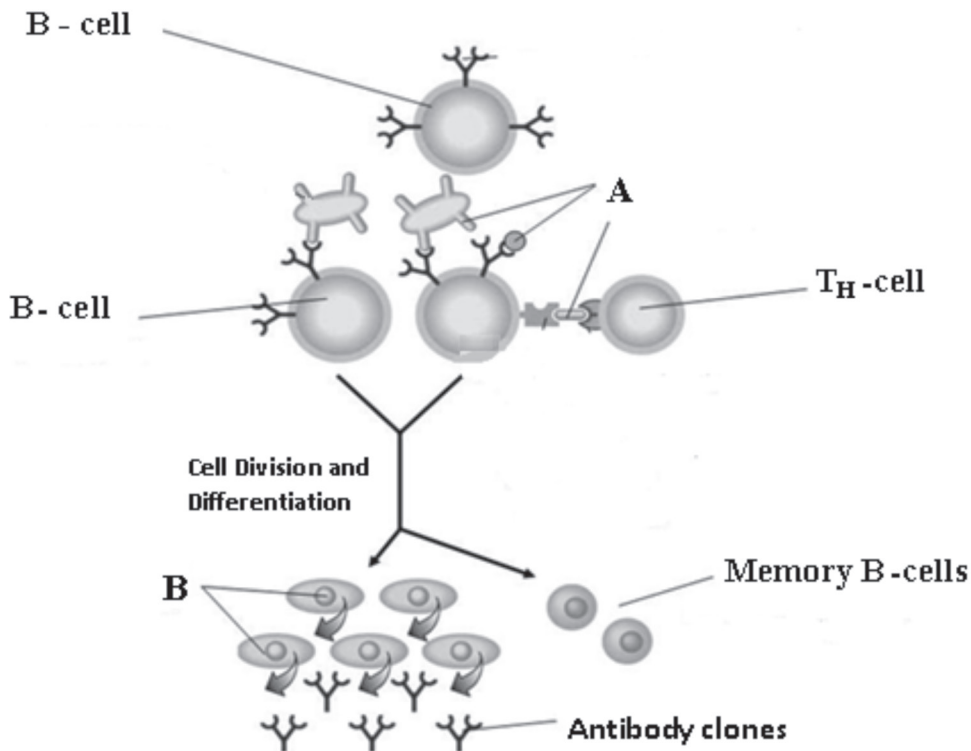
- b. Write the function of the parts ( Y ) and ( Z ).

Y: \_\_\_\_\_

Z: \_\_\_\_\_

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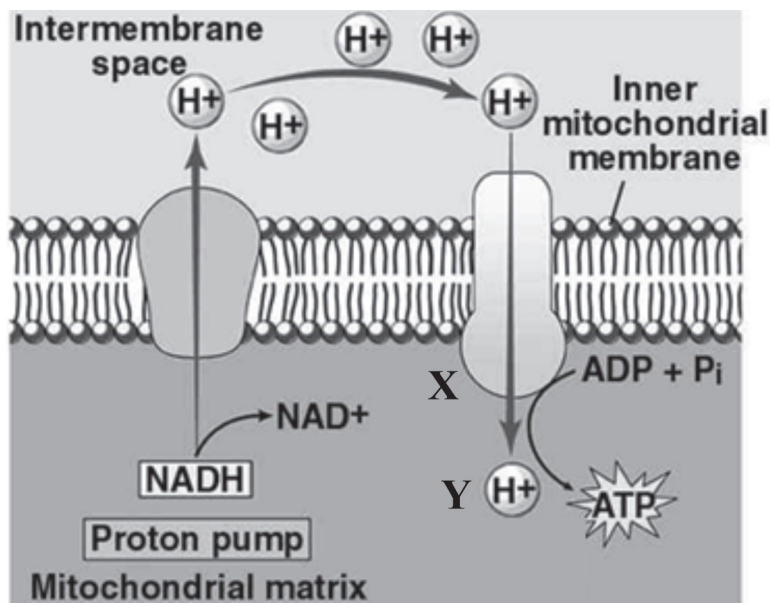
25) The diagram below represents one of the types of the immune response. (4 marks)



- What is the type of the immune response that is presented in the diagram?  
\_\_\_\_\_
- Name the cells labeled (A) and (B).  
A \_\_\_\_\_  
B \_\_\_\_\_
- Describe the importance of memory B-cells during the second invasion of the same antigen.  
\_\_\_\_\_  
\_\_\_\_\_

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- 26) The diagram below represents a model that explains the synthesis of ATP in oxidative phosphorylation (3 marks)



- a. Name the part labeled (X).
- \_\_\_\_\_
- b. Explain the importance of electrochemical gradient of hydrogen ions shown in the diagram.
- \_\_\_\_\_
- \_\_\_\_\_
- c. What is the fate of hydrogen ions labeled ( Y )?
- \_\_\_\_\_
- \_\_\_\_\_

[End of Examination]

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